EXTRACTIVE BIOCONVERSION OF GAMMA-CYCLODEXTRIN GLYCOSYLTRANSFERASE IN ALCOHOL/SALT AQUEOS TWO-PHASE SYSTEM

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Key Words: aqueous two-phase system, extractive bioconversion, cyclodextrin, *Bacillus cereus*, cyclodextrin glycosyltransferease.

In this study, extractive bioconversion of gamma-cyclodextrin (γ-CD) from soluble starch with *Bacillus cereus* cyclodextrin glycosyltransferase (CGTase, EC 2.4.1.19) was performed in alcohol/potassium phosphate aqueous two-phase system (ATPS). The influences of alcohol-based top phase (ethanol, 1-propanol and 2-propanol) on CGTase bioactivity were investigated. The result showed that the optimum condition was achieved in ATPS composed of 24.0% (w/w) ethanol and 20.0% (w/w) potassium phosphate with 3.0% (w/w) sodium chloride. It demonstrated that the γ-CD was primarily partitioned to the top phase and the CGTase remained in salt-rich bottom phase of the ATPS. The result indicated that a relatively high concentration of γ-CD (2.28 mg/mL) was recovered in the top phase of ethanol/potassium phosphate ATPS after 1 hour bioconversion operation. Continuous repetitive batch (three times) bioconversion of soluble starch was performed successfully

Extractive bioconversion of gamma-cyclodextrin glycosyltransferase in alcohol/salt aqueos two-phase system

In this study, extractive bioconversion of gamma-cyclodextrin (y-CD) from soluble starch with Bacillus cereus cyclodextrin glycosyltransferase (CGTase, EC 2.4.1.19) was performed in alcohol / potassium phosphate aqueous two-phase system (ATPS). The influences of alcohol-based top phase (ethanol, 1-propanol and 2-propanol) on CGTase bioactivity were investigated. The result showed that the optimum condition was achieves in ATPS composed of 24.0% (w/w) ethanol and 20.0% (w/w) potassium phosphate with 3.0% (w/w) sodium chloride. It demonstrated the the y-CD was primarily partitioned on the top phase and the CGTase reminded at (mg/mL) was recovered in the top phase of ethanol / potassium phosphate ATPS after 1 hour bioconversion operation. Continuous repetitive batch (three times) bioconversion of soluble starch was performed successive.

Key words: aqueous two-phase system, extractive bioconversion, cyclodextrin, Bacillus cereus, cyclodextrin, gycosyltransferease.